PATENT SPECIFICATION

805,216

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COMPLETE SPECIFICATION

Improvements in Projection Screens

We, GAETAN JAYLE, of 91, Rue Saint Jacques, Marseille, France, of French Nationality, and GERARD THOMAS D'HOSTE, of 4, Rue Jules Bourdais, Paris, France, of French Nationality, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

Screens for cinematographic projection or the projection of still views are generally constituted by a flexible image-receiving element mounted on a rigid frame. Because of this they are difficult to transport, and are cumbersome.

The object of the present invention is to provide a construction of screen in which a mounting frame for the image-receiving element is flexible and pliable, permitting very rapid erection of the screen whilst eliminating stretching means and folds or other irregularities which are generally produced by the portable mounting frames at present utilised.

According to the present invention an optical projection screen comprises an image-receiving element of continuous flexible sheet material, and an inflatable supporting frame secured about the periphery of said image-receiving element.

The image-receiving element may be silvered in its mass or on one side thereof, and may be provided with a white covering, a matt appearance or a fine grain.

The supporting frame may comprise a cylindrical airtight chamber.

Means are advantageously provided for suspending or hooking the supporting frame from a further support or stand.

The inflatable supporting frame may comprise an outer chamber to receive a high pressure, and an inner chamber to receive low pressure, said inner chamber being connected peripherally to the image-receiving element to assure uniform tension thereon, and the outer chamber being connected peripherally to said inner chamber.

Alternatively, the inflatable supporting chamber may be of substantially triangular cross-sectional shape, one side of said frame being provided with a strengthening member, the image-receiving element being connected to said frame at the edge on confluence of the other two sides, thereof.

In order that the invention may be more readily understood several embodiments thereof are hereinafter described, by way of example, with reference to the accompanying drawings, wherein:-

Figure 1 shows the screen in elevation;

Figure 2 shows part of the screen and part of the mounting frame in longitudinal section;

Figures 3 and 4 show various constructions of the mounting frame; and

Figures 5, 6 and 7 show various methods of supporting the screen.

In Figures 1 and 2 the screen comprises a flexible image-receiving element 1 of any appropriate material, such as cloth or a sheet of very flexible plastic material, which may be silvered in its mass or on the surface 2 thereof. On the opposite face 3, which is intended to receive the projected image is provided a layer of white plastic material, which may have a matt surface or a fine grain.

An air-tight cylindrical chamber 4, secured to the element 1 surrounds the latter along its whole periphery. Said chamber 4 includes an inflation valve 5, curved corners 6, and suspension or fastening means 7, 8, 9 and 10.

In the modification illustrated in Figure 3, which is intended for use with screens of greater overall dimensions, there are provided two superposed pneumatic chambers 11 and 12. The outer chamber 11 receives a high pressure inflation, of compressed air, to assure rigidity of the frame as a whole. The inner chamber 12, however, receives a low pressure inflation, and assures uniform tension of the screen.

In the embodiment shown in Figure 4, the chamber is provided with a semi-rigid reinforcing external wall 13 in order to conserve, after inflation, a rectilinear shape for the chamber. The portions 14 and 15 are

connected along their edge of confluence to the element 1.

Pneumatically inflatable frames of this kind permit the constructions of all types of screens, from those intended for amateur cinematograph projection to the large size screens which have recently become so common.

The inflation of the peripheral chamber 4 ensures rigidity of the frame whilst at the same time uniformly stretching the element 1. Although said element 1 has been shown in the drawings as being connected to a flange provided on the chamber member, it is possible for the element to be connected thereto in other ways.

As shown in Figure 6, the screen may be, utilised as a reflector, and for this purpose is mounted by its suspension means 8 and 10 (see Figure 1) on a trestle 16 and inclined to a desired angle in order to ensure reflection in the required direction.

Alternatively, as shown in Figure 5, after inflation the screen may be placed on a support 17 having forks 18 entering the stabilising means 7 or 9 shown in Figure 1.

However, it should be pointed out that by use of the embodiment illustrated in Figure 4 in conjunction with smaller size screens, it is possible for the screens to be self-supporting, i.e. they would rest on the more rigid part 13.

Finally, as shown in Figure 7, it is easy to shape the various chambers in order to achieve the necessary shaping of the element 1 for a panoramic screen, whereas with rigid, non-flexible, mountings this is far more difficult.

It is possible, if desired, to compartment the various chambers described above, to permit obtaining varying pressures within the chamber or chambers appropriate to the various parts of the screen.

The elimination of rigid mountings facilitates easy folding of the assembly, which, as well as giving a minimum of bulk, permits easier transportation of the whole. The inflation of the peripheral chamber assures not only a protection by its rigidity, but also a uniform tension of the surface of the screen which cannot present any irregularities or deformations. The resultants of forces arising, from the peripheral tractions, in view of the flexibility of the frame, compensate between themselves and tend to be uniformly spread out and balanced. It is in fact this uniform and balanced division of the tension which avoids the inconveniences of the rigid mountings and of their systems of stretchers with which it is almost impossible to avoid all creases.

WHAT WE CLAIM IS:—

1. An optical projection screen comprising an image-receiving element of continuous flexible sheet material, and an inflatable supporting frame secured about the periphery of said image-receiving element.

2. A screen, as claimed in claim 1, wherein the image-receiving element is silvered in its mass or on one face thereof.

3. A screen, as claimed in either of claims 1 or 2, wherein the image-receiving surface of the element is provided with a white covering, a matt appearance or a fine grain.

4. A screen, as claimed in any one of the preceding claims, wherein the supporting frame comprises a cylindrical air-tight chamber.

5. A screen, as claimed in any one of the preceding claims wherein means are provided for suspending or hooking the supporting frame from a further support or stand.

6. A screen, as claimed in any one of the preceding claims, wherein the inflatable supporting frame comprises an outer chamber to receive a high pressure, and an inner chamber to receive low pressure, said inner chamber being connected peripherally to the image-receiving element to assure uniform tension thereon, and the outer chamber being connected peripherally to said inner chamber.

7. A screen, as claimed in any one of claims 1 to 5, wherein the inflatable supporting frame is of substantially triangular cross-sectional shape, one side of said frame being provided with a strengthening member, the image-receiving element being connected to said frame at the edge of confluence of the other two sides thereof.

8. A screen constructed and arranged substantially as herein described with reference to any one of the embodiments illustrated in the accompanying drawings.

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1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

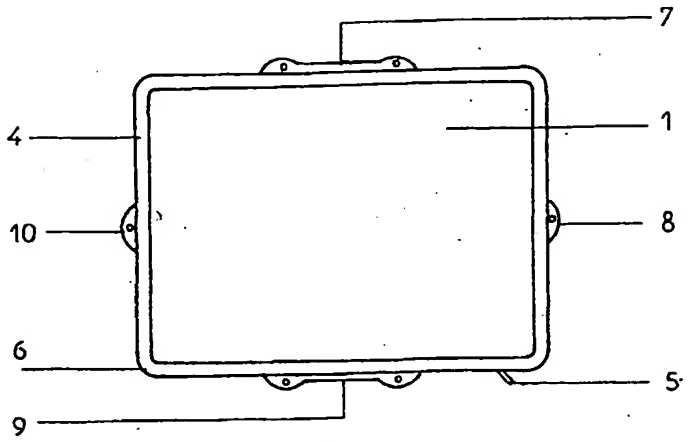

Fig.1.

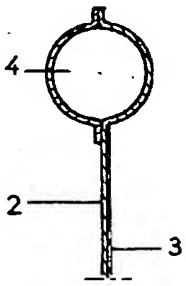

Fig.2.

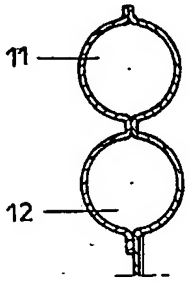

Fig.3.

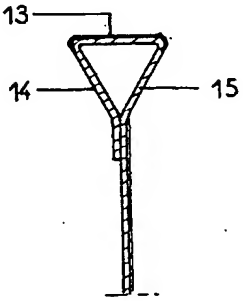

Fig.4.

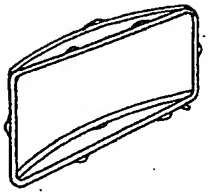

Fig.7.

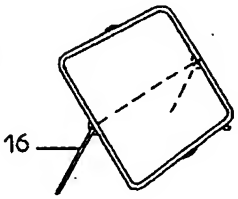

Fig.6.

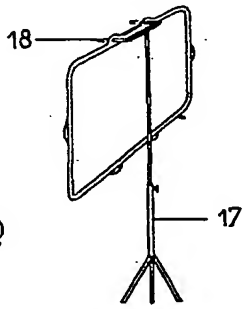

Fig.5.